

## ABSTRACT

An image wavelength conversion device for converting an infrared light image into a visible light, a method of manufacturing the device, and an image conversion system using the device are provided.

The image wavelength conversion device is formed by an optical waveguide array 3 in which one end and the other end of each of a multitude of quasi-phase-matching sum frequency generating optical waveguides are aligned in a two-dimensional plane. One plane of the optical waveguide array 3 forms an incident plane which includes respective waveguides as elements thereof, and the other plane of the optical waveguide array 3 forms an exit plane which includes waveguides corresponding to the waveguides of the incident plane as elements thereof. From an incident light ( $\lambda_1$ ) and an excitation light ( $\lambda_2$ ) incident to an arbitrary element of the incident plane, an output light ( $\lambda_3$ ) having the relationship of  $(\lambda_1)^{-1} + (\lambda_2)^{-1} = (\lambda_3)^{-1}$  is generated in the corresponding waveguide element.  $\lambda_1$ ,  $\lambda_2$ , and  $\lambda_3$  here represent the wavelength of the incident light, the wavelength of the excitation light, and the wavelength of the output light, respectively.